**Micro Case 19 – *Coccidioides immitis* (coccidioidomycosis)**

**1. Signs and symptoms for the disease it produces.**

* Pt had 3 week history of fever
* Night sweats
* Headache
* Joint pains
* Dry cough
* Severe fatigue
* Weight loss
* Pt had just returned from Phoenix, AZ
  + Disease is endemic to southwestern U.S.
* **Erythema nodosum** lesions
* **CXR showing infiltrates in both lungs w/ cavity**

**2. The source of infectious organism.**

*Coccidioides immitis*

**3. The manner of exposure, route of infection, tissues that they reside and, where appropriate, transmission to others.**

* Endemic in **southwestern United States, California (San Joaquin Valley),** and western half of Texas
* Also found in regions of Mexico
* Arid soil in and around rodent burrows is a common reservoir for hyphae and arthroconidia
* **Infection from inhaling arthroconidia** after disturbance of contaminated soil

**4. The pathology and the manner by which the particular disease develops and/or is induced, including damage caused by the pathogen and damage caused by the immune system’s response to the pathogen.**

* **Arthroconidium is deposited in the terminal bronchiole**
* Transforms into a spherule and pyogenic inflammation is mounted w/ infiltrate of PMNs
* Cell mediated immunity is important for recovery – get **chronic granulomatous inflammation**
  + May get caseation w/o calcification leading to pulmonary lesions
* Recovery usually followed by lifelong immunity, but can get reactivation, esp if immunocompromised
* Dissemination to skin causes **erythema nodosum** lesions

**5. Methods of identification and placement into a particular biological subset.**

* **Direct microscopy** to visualize fungal structures in silver, Giemsa, or Wright-stained biopsy
* **Serology:** Immunodiffusion or Complement fixation
* **Fungal cultures**

*C. immitis* is a **dimorphic fungus.** Forms **arthroconidia** when soil is disturbed, then become airborne. If inhaled, arthroconidia can reach pulmonary alveoli and transform into **thick-walled, nonbudding spherules** which produce **endospores.** **Culture** requires prolonged incubation and yields light fluffy mold.

**6. Factors leading to enhanced resistance or susceptibility (e.g., recipients of vaccines, residence in geographic areas, types of work, immunodeficiency, alcoholism, age, violence/abuse, religious beliefs, etc.).**

Immunocompromised at higher risk for reactivation

**7. Other organisms in the differential diagnosis and how to discriminate among potential causative agents.**

* Blastomycosis
* Histoplasmosis
* *Legionella* or other atypical pneumonia
* Nocardiosis
* Pneumococcal pneumonia
* TB

When making differential, consider the endemic fungi. Pneumococcus and *Legionella* are more common causes of acute pneumonia than fungi and TB. *Nocardia* can cause chronic sx but is less common in low risk patients.

**8. Prevention, treatment and vaccine design (live vs. dead).**

**Fluconazole** or **Itraconazole** for 3-6 months. **Amphotericin B** in severe pneumonia, particularly in immunocompromised individuals.

No vaccine. Hospitalized pts don’t require special infection control measures because there is no person-to-person spread.